CLAIMS

1. A method of controlling a radio frequency (RF) output power level of a repeater, comprising:

sampling traffic load characteristics during operation of a network; and

adjusting a gain of at least one component of said repeater based on said traffic load characteristics.

2. The method according to claim 1, wherein said sampling comprises sampling a parameter related to changing paths of actual levels of traffic.

3. The method according to claim 1 or claim 2, wherein said sampling comprises repeatedly sampling said traffic load characteristics according to a predetermined scheme.

4. The method according to any of claims 1-3, wherein said sampling comprises automatically sampling said traffic load characteristics at predetermined time intervals.

5. The method according to any of claims 1-4, wherein said sampling comprises sampling said traffic load characteristics by one or more components of a down-link section of said repeater.

6. The method according to any of claims 1-5, wherein said sampling comprises sampling said traffic load characteristics by one or more components of an up-link section of said repeater.

7. The method according to any of claims 1-6, comprising sustaining an output signal power of said repeater substantially at a desired, predefined, level during operation of said network.

8. The method according to claim 7, wherein said predefined output signal power level relates to an optimal power for said traffic characteristics.

9. The method according to claim 7 or claim 8, wherein said predefined output signal power level relates to a maximal power for said traffic characteristics.

10. The method according to any of claims 1-9, wherein said repeater comprises a digital repeater.

11. The method according to any of claims 1-9, wherein said repeater comprises an analog repeater.

12. The method according to claim 1-11 comprising an uplink section and a downlink section, wherein said adjusting comprises adjusting the gain of one or more components of either or both said

down-link section and said up-link section based on an output power level of said up-link section.

13. The method according to any of claims 1-11 comprising an uplink section and a downlink section, wherein said adjusting comprises adjusting the gain of one or more components of said up-link section based on a gain of at least one component of said down-link section.

14. The method according to 1-13, and comprising:

monitoring a parameter of one or more components of said repeater to detect an oscillation event; and

if an oscillation event is detected, proactively modifying the gain of one or more components of said repeater according to a predetermined scheme.

15. An apparatus to amplify power of a radio frequency (RF) signal, comprising:

an attenuator to produce an attenuated signal by attenuating a parameter of an input signal;

a power amplifier to produce an output signal by amplifying said attenuated signal;

a power monitor to monitor the power level of said output signal; and

a RF gain controller able to adjust said output power by controlling the attenuation of said input signal by said attenuator based on traffic load characteristics sampled during operation of a network.

16. The apparatus according to claim 15, wherein said RF gain controller is able to sample said traffic load characteristics.

17. The apparatus according to claim 16, wherein said gain controller is adapted to repeatedly sample said traffic load characteristics.

18. The apparatus according to claim 16 or claim 17, wherein said gain controller is adapted to automatically sample said traffic load characteristics at predetermined time intervals.

19. The apparatus according to claim 16, wherein said gain controller is adapted to sample said traffic load characteristics upon request.

20. The apparatus according to any of claims 15-19, wherein said gain controller is adapted to sustain a substantially predefined output signal power level of one or more devices communicating in said network during the operation of said network.

21. A system for adjusting power of a radio frequency (RF) output, comprising:

a receiver to receive a signal;

a filtering unit configured to pass frequency components at or around a frequency band of a predefined communication channel;

an attenuator to produce an attenuated signal by attenuating a parameter of said signal;

a power amplifier to adjust the power of said RF output to a desired level by adjusting a gain of one or more components of said system; and

a microprocessor to receive an input responsive to the power of said RF output and, based on said input, to provide adjustment control signals to said receiver and said attenuator.

22. The system according to claim 21, wherein either or both of said receiver and said attenuator are able to adjust the signal received by said receiver to a desired input level based on said adjustment control signals.

23. The system according to claim 21 or claim 22, wherein either or both of said receiver and said attenuator are able to adjust a parameter of the frequency components passed by said filtering unit based on said adjustment control signals.

24. The system according to any of claims 21-23, wherein said power amplifier unit comprises:

an additional attenuator to reduce the amplitude of said signal;

a high-power amplifier to increase the power of said signal;

a power monitor to monitor the level of said power output; and

a RF gain controller circuit able to adjust said additional attenuator to reduce said amplitude according to multiple samples of traffic load characteristics sampled during operation of a network.

25. The system according to any of claims 21-24, wherein said filtering unit comprises:

an analog to digital converter to generate a digital signal correlated to the received signal;

a digital filter configured to pass frequency components at or around the frequency band of said communication channel and to exclude frequency components indicative of interference signals; and

a digital to analog converter to generate an analog signal correlated to the filtered digital signal.

26. The system according to any of claims 21-25, wherein said microprocessor is able to monitor oscillations of the system and, upon detecting an oscillation event, to cause one or more components of the system to modify the a gain of one or more components of the system according to a predetermined scheme.

27. The system according to claim 26, wherein said processor is able to modify the gain of said one or more components by sending to said one or more components control signals responsive to a desired modification according to said predetermined scheme.